WHAT IS CLAIMED IS:

1. A method for automatically setting threshold values for use by a microwave level transmitter to detect reflected pulses corresponding to portions of a transmitted microwave pulse, the method comprising:

calculating an estimated first reflected pulse amplitude as a function of:

a correction factor;

a first dielectric parameter having a value corresponding to a dielectric of a first material adjacent to an antenna;

a reference amplitude of a transmitted microwave pulse; and

a second dielectric parameter having a value corresponding to a dielectric of a second material located below the first material; and

setting a first threshold value as a function of the estimated first reflected pulse amplitude.

2. The method of claim 1, wherein:

a first material interface is formed between the first and second materials; and

a first reflected pulse, corresponding to a portion of the transmitted microwave pulse reflected at the first material interface, is detectable using the first threshold

value.

3. The method of claim 1, wherein the first threshold value is further a function of at least one of an attenuation factor, a range factor, and an offset value.

4. The method of claim 1, further comprising:
calculating an estimated second reflected pulse amplitude as a function of the reference amplitude, the correction factor, the first dielectric parameter, the second dielectric parameter, and a third dielectric parameter having a value corresponding to a dielectric of a third material located below the second material; and
setting a second threshold value as a function of the estimated second reflected pulse amplitude.

5. The method of claim 4, wherein:
a second material interface is located between the second and third materials; and
a second reflected wave pulse, corresponding to a portion of the transmitted microwave pulse reflected at the second material interface, is detectable using the second threshold value.

6. The method of claim 4, wherein the second threshold value is further a function of at least one of an attenuation factor, a range factor, and an offset value.

7. The method of claim 1, further comprising:

calculating an estimated fiducial pulse amplitude as a function of the reference amplitude, the correction factor, and the first dielectric parameter; and

setting a fiducial threshold value as a function of the estimated fiducial pulse amplitude.

8. The method of claim 7, wherein:

a fiducial interface is formed between the antenna and the first material; and

a fiducial pulse, corresponding to a portion of the transmitted microwave pulse reflected at the fiducial interface is detectable using the fiducial threshold value.

9. The method of claim 7, wherein the fiducial threshold value is further a function of at least one of an attenuation factor, a range factor, and an offset value.

10. A method for automatically setting threshold values for use by a microwave level transmitter to detect reflected pulses corresponding to portions of a transmitted microwave pulse, the method comprising:

setting a correction factor;

selecting a first dielectric parameter corresponding to a dielectric of a first material adjacent an antenna;

setting a reference amplitude relating to the microwave pulse;

setting a second dielectric parameter to a value corresponding to a dielectric of a second material located below the first material;

calculating a first pulse amplitude as a function of the reference amplitude, the correction factor, and the first and second dielectric parameters; and

setting a first threshold value as a function of the first pulse amplitude.

11. The method of claim 10, wherein:

a first material interface is formed between the first and second materials; and

a first reflected pulse, corresponding to a portion of the transmitted microwave pulse reflected at the first material interface, is detectable using the first threshold value.

12. The method of claim 10, further comprising:

setting a third dielectric parameter to a value corresponding to a dielectric of a third material located below the second material

calculating a second pulse amplitude as a function of the reference amplitude, the correction factor, and the first, second and third dielectric parameters; and

setting a second threshold value as a function of the second pulse amplitude, whereby a second reflected wave pulse, corresponding to a portion of the microwave pulse reflected at a second material interface, can be detected using the second threshold value.

13. The method of claim 10, further comprising:

calculating a fiducial pulse amplitude as a function of the reference amplitude, the correction factor, and the first dielectric parameter; and

setting a fiducial threshold value as a function of the fiducial pulse amplitude, whereby a fiducial pulse, corresponding to a portion of the microwave pulse reflected off a fiducial interface, is detectable using the fiducial threshold value.

14. The method of claim 10, wherein the first threshold value is further a function of at least one of an attenuation factor, a range factor, an offset value, and temperature.

15. The method of claim 12, wherein at least one of the first and second threshold values is further a function of at least one of an attenuation factor, a range factor, an offset value, and temperature.

16. The method of claim 10, further comprising:

receiving a calculated dielectric constant relating to the dielectric constant of the second material from a dielectric constant calculator;

re-calculating the estimated first pulse amplitude using the calculated dielectric constant; and

setting the first threshold value as a function of the re-calculated estimated first pulse amplitude.

17. A radar level transmitter for providing level detection of materials in a container, the transmitter comprising:

an antenna;

a transceiver coupled to the antenna and configured to: transmit a microwave pulse having an amplitude using the antenna and produce a signal representing reflected wave pulses;

a microprocessor system coupled to the transceiver and adapted to control the transceiver and process the signal;

a threshold calculation module executable by the microprocessor system and adapted to calculate a first threshold value as a function of the amplitude and properties of the materials; and

a level calculation module executable by the microprocessor system and adapted to establish a level of a first material interface using the signal and the first threshold value.

18. The radar level transmitter of claim 17, wherein:

the threshold calculating module is further adapted to calculate a second threshold value as a function of the amplitude and the properties of the materials; and

the level calculation module is further adapted to calculate a level of a second material interface using the signal and the second threshold value.

19. The radar level transmitter of claim 17, including an input/output port adapted to transmit a level output that is indicative of the first material interface.

20. The radar level transmitter of claim 17, including a dielectric constant calculator adapted to

calculate a dielectric parameter relating to one of the properties of the materials as a function of the amplitude and a first reflected wave pulse corresponding to a portion of the microwave pulse reflected at the first material interface, and provide the dielectric parameter to the threshold calculation module for use in establishing the level of the first material interface.